

Test laboratory for the fire behavior of building materials, Dipl.-Ing. (FH) Andreas Hoch
Testing, supervising and certifying body, authorized by the building supervision authority

TEST REPORT PZ-Hoch-161050

for the proof of Fire behaviour according to DIN 4102, part 1

Translation of the German test report – no guarantee for translation of technical terms

company	Moore & Moore Sales, L.L.C. 947 Bonnie Brae Place River Forest, IL 60305 - USA
description of samples	projection foils consisting of PVC
name of the material	„RP120 - grey” & „CW120 – creamy white”
sampling	by the company itself
content of request	Proof of flammability to classify building materials to class B1 “schwerentflammbar” according to DIN 4102, part 1
validity of test report	31.08.2021
result	The examined products meet the requirements of class B1 for “schwerentflammbare” (hardly flammable) building materials according to DIN 4102, part 1 (May 1998) , suspended freely or with distance of >40 mm to same or other plain materials.

This test report includes 5 pages and 8 enclosures.

Remark: If the above mentioned building material is not used as product according to MBO § 2, Abs. 9, Ziffer1, there is no need for a general building supervisory test report.

This test report is not valid if the examined building material is used as product in the meaning of state building prescriptions (MBO § 17, Abs. 3).

This test report does not replace an eventually necessary proof of applicability concerning building supervisory or building laws in the meaning of state building prescriptions. This has to be verified by:

- “allgemeine bauaufsichtliche Zulassung” (general building inspectorate approval) or by
- „allgemeines bauaufsichtliches Prüfzeugnis“ (general building inspectorate certificate) or by
- “Zustimmung im Einzelfall” (exceptional approval)

This test report can underlie building supervisory procedures

- for regular building products for the prescribed proofs of conformity
- for non regular building products for the needed proofs of applicability.

This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.

1. Description of test material in condition as delivered

PN 24211: "CW120 – creamy white" colour: light beige

-projection foil consisting of PVC-
side B: a little bit smoother

characteristic values determined by the test laboratory:

area weight: about 378 g/m² thickness: about 0,30 mm

PN 24214: "RP120 - grey" colour: grey

-projection foil consisting of PVC-
side B: a little bit smoother

characteristic values determined by the test laboratory:

area weight: about 371 g/m² thickness: about 0,30 mm

The testing laboratory is not provided with further details concerning composition of the tested building materials. Samples are deposited.

2. Preparation of samples

The samples were kept in climate chamber 23/50 until they reached constant weight.

3. Arrangement of samples

mounting: freely suspended

#8318:	"RP120 - grey"	flaming side A in machine direction
#8319:	"RP120 - grey"	flaming side B in machine direction
#8320:	"RP120 - grey"	flaming side A in transverse direction
#8325:	"RP120 - grey"	flaming side A in machine direction
#8326:	"RP120 - grey"	flaming side A in machine direction
#8321:	"CW120 – creamy white"	flaming side A in machine direction

4. Date of test CW 39 in 2016

5.1. Results (part 1) The test has been examined according to DIN 4102 (Mai 1998)

line no.	Measurement	Result with the tested specimen						Dim.
	Test number	#8318	#8319	#8320	#8325	#8326	#8321	
	flamed direction	A	B	A	A	A	A	
	flamed side / machine direction	mach.	mach.	transv.	mach.	mach.	mach.	
	transverse direction							
	material	„RP120“				„CW120“		
1	Number of specimen arrangement acc. to. DIN 4102/T15, schedule 1	1	1	1	1	1	1	
2	Maximum flame height above bottom edge of the specimen	80	100	60	100	90	80	cm
3	Time ¹⁾	0:25	0:15	0:10	0:19	0:16	0:11	min:s
4	Burn through / melting Time ¹⁾	0:05	0:05	0:05	0:05	0:05	0:04	min:s
5	Observations on the back side of the specimen Flames / Glowing Time ¹⁾	./.	./.	./.	./.	./.	./.	min:s
6	Change of color Time ¹⁾	./.	./.	./.	./.	./.	./.	min:s
7	Falling of burning droplets Start ¹⁾	./.	./.	./.	./.	./.	./.	min:s
8	Extent	./.	./.	./.	./.	./.	./.	
9	sporatic falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	min:s
10	continuous falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	min:s
11	Falling of burning droplets Start ¹⁾	./.	./.	./.	./.	./.	./.	min:s
12	Extent	./.	./.	./.	./.	./.	./.	
13	sporatic falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	min:s
14	continuous falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	min:s
15	Afterflame time at the bottom of the sieve (max.)	./.	./.	./.	./.	./.	./.	min:s
16	Impairment of the burner by dropping or falling material: Time ¹⁾	./.	./.	./.	./.	./.	./.	min:s
17	Premature end of test	./.	./.	./.	./.	./.	./.	min:s
18	Final occurrence of burning at the specimen ¹⁾	./.	./.	./.	./.	./.	./.	min:s
19	Time of eventually end of test ¹⁾	./.	./.	./.	./.	./.	./.	min:s
20	Afterflame after end of test Time ¹⁾	./.	./.	./.	./.	./.	./.	min:s
21	Number of specimen	./.	./.	./.	./.	./.	./.	
22	Front side of specimen ²⁾	./.	./.	./.	./.	./.	./.	
23	Back side of specimen ²⁾	./.	./.	./.	./.	./.	./.	
24	flame length	./.	./.	./.	./.	./.	./.	cm

line no.	Measurement	Result with the tested specimen						Dim.
	Test number	#8318	#8319	#8320	#8325	#8326	#8321	
	flamed direction	A	B	A	A	A	A	
	flamed side / machine direction	mach.	mach.	transv.	mach.	mach.	mach.	
	transverse direction							
22	<u>Afterglow after end of test</u>	./.	./.	./.	./.	./.	./.	min:s
	Time ¹⁾	./.	./.	./.	./.	./.	./.	
23	Number of specimen	./.	./.	./.	./.	./.	./.	
	<u>Place of appearance</u>	./.	./.	./.	./.	./.	./.	
24	Lower half of the specimen ²⁾	./.	./.	./.	./.	./.	./.	
25	Upper half of the specimen ²⁾	./.	./.	./.	./.	./.	./.	
26	Front side of specimen ²⁾	./.	./.	./.	./.	./.	./.	
27	Back side of specimen ²⁾	./.	./.	./.	./.	./.	./.	
28	<u>Density of smoke</u>							% * min
	≤ 400 % * min	103	84	50	75	117	72	
29	> 400 % * min ⁴⁾	./.	./.	./.	./.	./.	./.	
30	Diagram: encl. no.	1	2	3	4	5	6	
31	<u>Residual lengths: individual value ³⁾</u>							
	Specimen 1	24	43	63	5	34	56	cm
	Specimen 2	23	26	49	46	5	40	cm
	Specimen 3	26	25	67	26	28	35	cm
	Specimen 4	30	37	64	6	21	38	cm
32	<u>Average value, individual test ³⁾</u>	26	33	61	21	22	42	
33	<u>Photo of specimen in enclosure no.</u>	1	2	3	4	5	6	
34	<u>Flue gas temperature</u>	115	115	111	133	122	115	°C
35	Maximum of average value							
	Time ¹⁾	0:18	09:57	09:51	0:21	0:18	09:42	min:s
36	Diagram: encl. no.	1	2	3	4	5	6	
37	Remarks: - none -							

¹⁾ indication of times: from the begin of testing procedure ²⁾ checked off if applicable

³⁾ indication of carrier/foam layer separated in case of fire-proofing agents

⁴⁾ very strong development of smoke

6. Explanations concerning the testing procedure

-none-

7. Summary of results and additional establishments to Fire Behaviour

measurement	Result with the tested specimen						Dim.
	#8318	#8319	#8320	#8325	#8326	#8321	
flamed direction flamed side / machine direction transverse direction	A mach.	B mach.	A transv.	A mach.	A mach.	A mach.	
material	„RP120“					„CW120“	
1 residual length	26	33	61	21	22	42	cm
2 max. smoke temperature	115	115	111	133	122	115	°C
3 density of smoke - integral	103	84	50	75	117	72	%min
4 remarks: none							

According to DIN 4102, part 1, "schwerentflammbare" (hardly flammable) building materials must meet the requirements of class B2.

Pursuant to additional tests in the ignitability apparatus this can be determined (appendix 7 & 8).

8. Special remarks

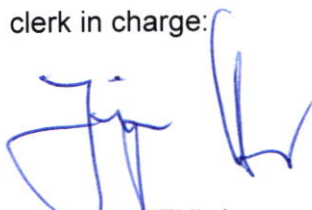
- This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions.
- This test report is not valid, as soon as the fabric is used as a building product in the sense of the "Landesbauordnungen" (state building requirements, MBO § 17, par. 3).
- This test report is no substitute for a General Building Inspectorate Certificate.
- This test report is granted without prejudice to the rights of third parties, im particular private proprietary rights.
- For legal interests only the German original version is relevant.
- In General Building Inspectorates procedures this test report can be based for
 - regular building materials for the required proof of accordance
 - for not regular building materials for the required proof of applicability

9. Validity

This test report is valid until the mentioned date on page 1. The test report becomes invalid in case the standards on which the tests are based are changed.

Fladungen, 10.10.2016

clerk in charge:



(Dipl.-Ing. (FH) Jürgen Hammer)



Head of the test laboratory:



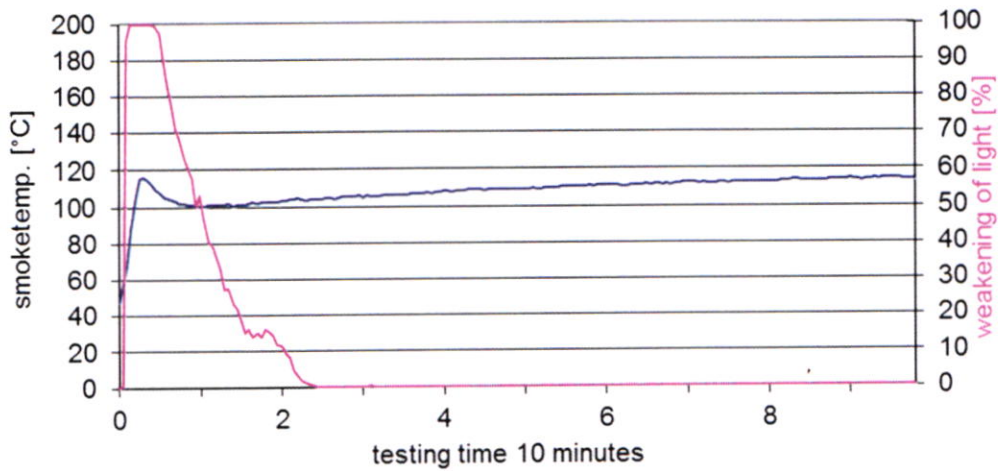
(Dipl.-Ing.(FH) Andreas Hoch)

„Brandschacht“-test #8318



measurement

#8318, Moore & Moore, "RP120-grey", A+L, PN 24214
 residual length: 26cm, max.smoketemp: 115°C,smoke-Int.: 103%min

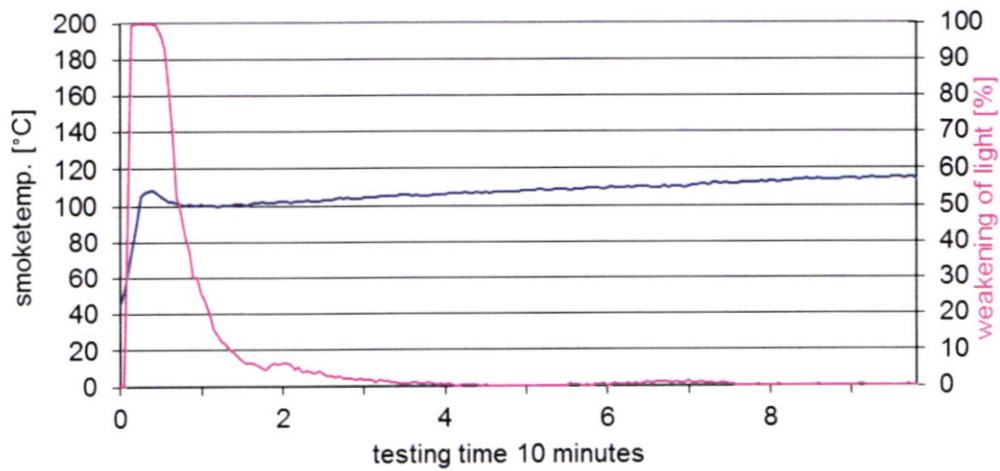


„Brandschacht“-test #8319



measurement

#8319, Moore & Moore, "RP120-grey", B+L, PN 24214
 residual length: 33cm, max. smoketemp.: 115°C, smoke-Int.: 84%min

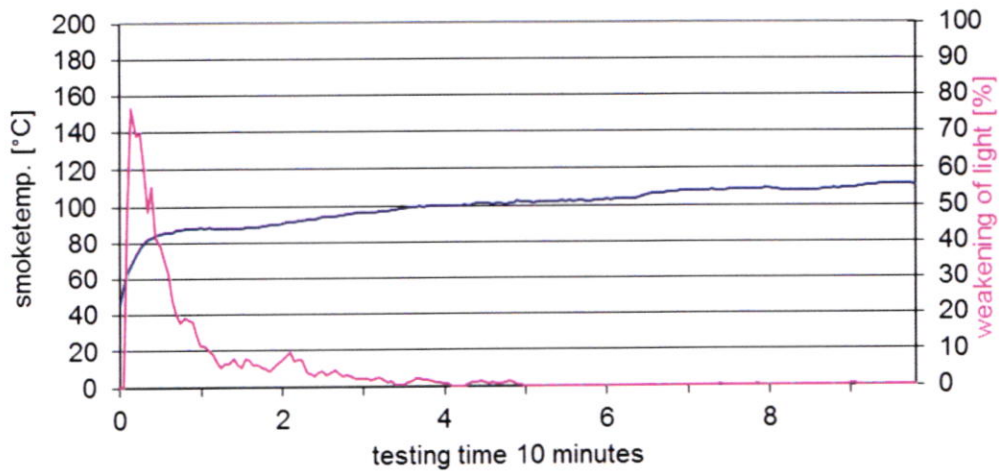


„Brandschacht“-test #8320

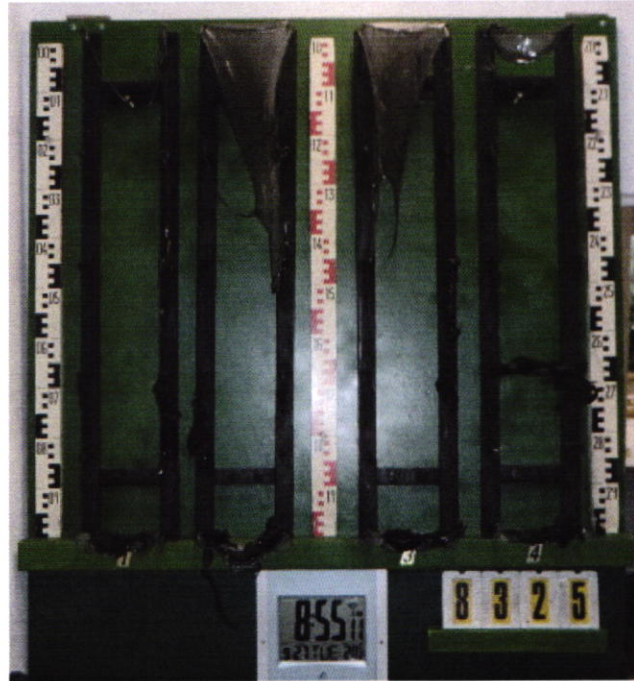


measurement

#8320, Moore & Moore, "RP120-grey", A+Q, PN 24214
residual length: 61cm, max. smoketemp: 111°C, smoke-Int.: 50%/min

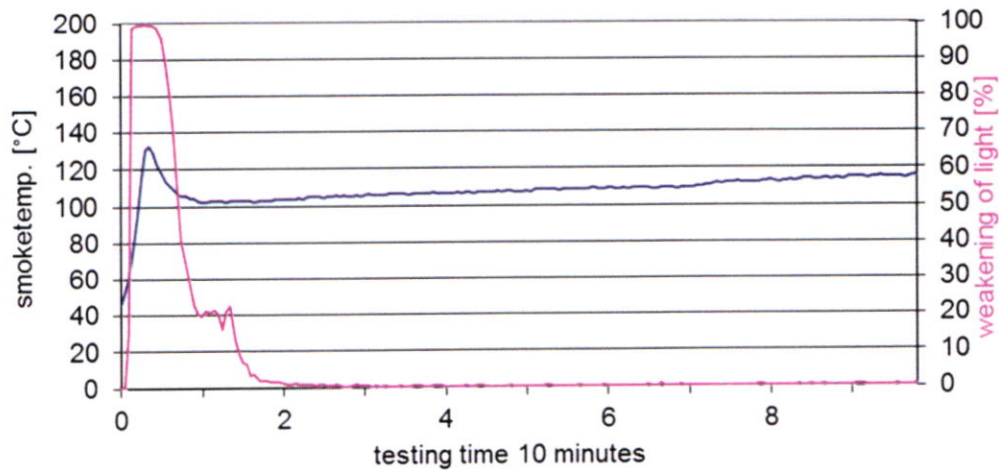


„Brandschacht“-test #8325

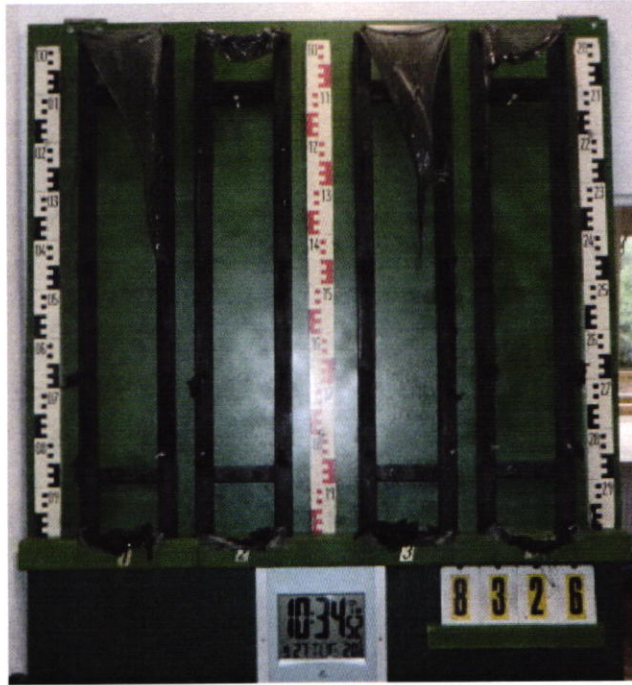


measurement

#8325, Moore & Moore, "RP120-grey", A+L, PN 24214
residual length: 21cm, max. smoketemp.: 133°C, smoke-Int.: 75%min

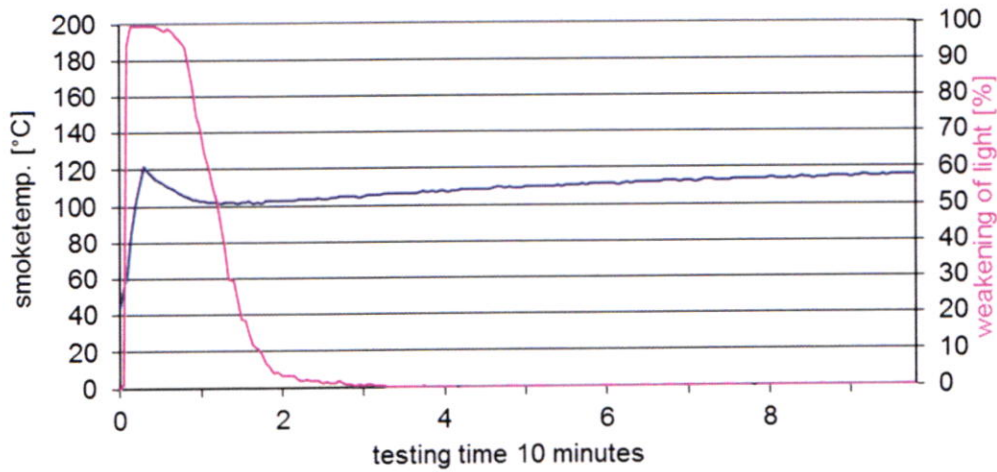


„Brandschacht“-test #8326



measurement

#8326, Moore & Moore, "RP120-grey", A+L, PN 24214
residual length: 22cm, max. smoketemp: 122°C, smoke-Int.: 117%/min

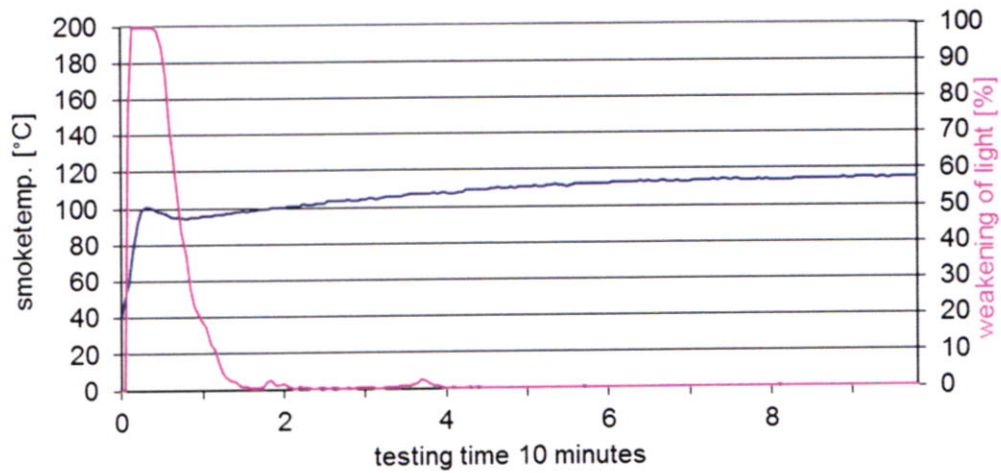


„Brandschacht“-test #8321



measurement

#8321, Moore & Moore, "CW120-creamy white", A+L, PN 24211
residual length: 42cm, max.smoketemp.: 115°C, smoke-Int.: 72%min



Test for normal flammability classifying B2 according to DIN 4102

1. Description of test material in condition as delivered look at page 2
2. Preparation of samples
Out of the material there have been cut samples for the ignitability apparatus.
The samples were kept in a climate 23/50 until they reached constant weight.
3. Arrangement of samples -freely suspended-
Flaming in machine direction and in transverse direction / Flaming side A and side B
4. Date of test CW 37 and CW 38 in 2016
5. Results

PN 24214: flaming side A in machine direction	edge-test						surface-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition ¹⁾	1	1	1	1	1	--	2	--	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	--	--	--	--	--	s
max. flame height	8	9	10	8	8	--	7	--	--	--	--	--	cm
time	10	8	10	10	11	--	11	--	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	13	15	15	15	15	--	15	--	--	--	--	--	s
end of glowing ¹⁾	-/-	17	17	17	16	--	-/-	--	--	--	--	--	s
smoke development (visual)	very heavy						very heavy						
dropping of burning material during 20 s ¹⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	--	--	--	--	--	s
Appearance after test: destroyed / burned out till max. height 12 cm x width 3 cm													

PN 24214: additional tests	edge-test						surface-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition ¹⁾	1	1	1	--	--	--	2	2	2	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	-/-	-/-	--	--	--	-/-	-/-	-/-	--	--	--	s
max. flame height	7	7	7	--	--	--	5	7	9	--	--	--	cm
time	10	10	10	--	--	--	8	6	9	--	--	--	
self cessation of the flames end of afterflame ¹⁾	15	17	19	--	--	--	13	14	13	--	--	--	s
end of glowing ¹⁾	15	17	19	--	--	--	-/-	-/-	-/-	--	--	--	s
flames were extinguished after ¹⁾	-/-	-/-	-/-	--	--	--	-/-	-/-	-/-	--	--	--	s
smoke development (visual)	very heavy						very heavy						
dropping of burning material during 20 s ¹⁾	-/-	-/-	-/-	--	--	--	-/-	-/-	-/-	--	--	--	s
Appearance after test: destroyed / burned out till max. height 12 cm x width 3 cm													

¹⁾ time mentioned from the beginning of the test ²⁾ during 20 Sec -/- no appearance -- no information

PN 24211:	edge-test						surface-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition ¹⁾	1	1	1	1	--	--	2	2	2	2	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	-/-	-/-	-/-	--	--	-/-	-/-	-/-	-/-	--	--	s
max. flame height	9	8	9	6	--	--	7	7	6	8	--	--	cm
time	9	7	10	10	--	--	8	9	7	8	--	--	
self cessation of the flames end of afterflame ¹⁾	13	10	15	18	--	--	15	15	15	16	--	--	s
end of glowing ¹⁾	15	15	15	18	--	--	-/-	-/-	-/-	-/-	--	--	s
flames were extinguished after ¹⁾	-/-	-/-	-/-	-/-	--	--	-/-	-/-	-/-	-/-	--	--	s
smoke development (visual)	very heavy						very heavy						
dropping of burning material during 20 s ¹⁾	-/-	-/-	-/-	-/-	--	--	-/-	-/-	-/-	-/-	--	--	s
Appearance after test: destroyed / burned out till max. height 12 cm x width 3 cm													

¹⁾ time mentioned from the beginning of the test ²⁾ during 20 Sec -/- no appearance -- no information

6. Remarks and explanations to the testing procedure - none –

7. Opinion concerning the dropping of burning material

The test for normal flammability shows no dripping burning material.